Foreign Bank Ownership and Household Credit

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Abstract: Theoretical and empirical work has shown the importance of banks in helping overcome information asymmetries and consequent agency problems between borrowers and lenders. This paper contributes to this literature by showing the importance that bank ownership of banks plays in helping ease such frictions in the retail market. Using survey data for over 16,500 households from 19 emerging economies in Central and Eastern Europe in 2010 this paper is the first to document that information asymmetries in the retail credit market lead foreign banks to cherry-pick financially transparent clients in similar ways as documented previously for enterprise credit. First, a higher market share of foreign banks in a country is associated with a larger gap in credit use between households with and without formal employment. Second, among mortgage borrowers, clients of foreign banks are more likely to be formally employed, are more likely to have personal assets, and are richer than clients of domestic banks. Third and consistent with these results, retail lending techniques of foreign banks rely more on financial information and collateral than those of domestic banks.

Keywords: Access to finance, Household credit, Bank-ownership.

JEL Codes: G2, G18, O16, P34

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1. Introduction

To what extent financial institutions can overcome information asymmetries in lending is critical for access to credit in both developed and developing countries. In this context, the relationship between foreign ownership of banks and access to credit in emerging markets has been intensively discussed. From a theoretical viewpoint it has been conjectured that foreign banks may "cherry pick" those clients to which they can lend on a transactional basis implying that financially opaque clients may have relatively less access to credit in countries with foreign dominated banking sectors. Worse still, by cream-skimming the credit market, foreign-owned banks may make it unprofitable for their competitors to lend, implying an absolute decrease in credit access for clients which rely on relationship banking. Empirically, the relationship between foreign bank ownership and cherry-picking in the credit market has focused exclusively on corporate and small business credit. In this paper we expand that analysis to the fastest growing segment of credit market in most emerging markets: household credit.

Over the past decades, household credit has gained increasing importance across the developed and developing world, with its share in total bank lending passing 40% in many Central and Eastern European countries in 2007 (Beck et al., 2012a,b). It is therefore important to understand how the ownership structure of the banking sector may impact access to credit across different households. If, due to different organizational processes and a lack of local knowledge, foreign banks focus their lending on large and audited firms rather than small sole-proprietorships, the same banks may focus their retail lending on households with formal income sources and marketable collateral as opposed to households with informal income sources and illiquid assets.

The banking sectors of emerging markets and developing countries are increasingly dominated by foreign-owned institutions. Between 1995 and 2009 the share of foreign-owned

banks among the total number of banks increased from 18% to 36% across all emerging markets and from 24% to 46% in developing countries (Claessens and Van Horen, 2012). Foreign banks are especially dominant in Emerging Europe where they account for more than 60% of total bank assets in 15 countries. In this paper we examine how foreign ownership of the banking sector affects access to credit for households in this region.

This paper uses household survey data from 19 countries in Emerging Europe (including Russia and Turkey) taken from the EBRD's Life in Transition Survey (LITS) database to assess how cross-country variation in bank ownership affects the composition of households which use credit. Specifically, we first examine whether in countries with a higher market share of foreign banks the use of mortgage loans and credit cards is tilted towards high-income households, formally employed households, and households with pledgable assets (i.e. a car). Second we examine whether the most creditworthy clients (from an objective viewpoint) are more likely to have outstanding loans with foreign as opposed to domestic banks. We corroborate our findings with a comparison of lending techniques for 345 banks in our sample region, employing data from the 2012 Bank Environment and Performance Survey (BEPS) of the EBRD. This survey data allows us to establish whether foreign and domestic banks use different lending procedures, which are consistent with their different client profiles.

The countries of Emerging Europe are an almost ideal sample to study the relationship between bank ownership and household credit. After the fall of communism, these countries had to transform their state-owned, mono-banking systems into two-tier market-based financial systems.[1] Countries, however, chose different financial sector reform paths.[2] Some countries opted for domestic privately-owned banking systems through privatization or the

[1] The state-bank systems before the transition had quite extensive networks with large shares of the population having savings accounts. However, besides the notable exceptions of Czechoslovakia, Bulgaria and Hungary with high levels of financial intermediation there was little cross-country variation before the on-set of the transition process.

[2] See Bonin and Wachtel (2003) for a survey of financial sector reforms in the transition economies.

entry of new domestic players. Others opted for foreign bank entry early on, be it through privatization or by encouraging greenfield entry (Claeys and Hainz, 2007). These different strategies were mostly driven by different macroeconomic policy programs and less if at all by concerns about access to household credit. Existing evidence suggests that foreign bank entry has been associated with a strong increase in lending to households in the region (Brown and De Haas, 2012). However, there is no evidence up to now on which households benefitted from this expansion of household credit.

Our data document a large variation in the use of credit by households across Emerging Europe. The share of households with an outstanding mortgage in Hungary (15 percent) and Estonia (14 percent) is comparable to that in Western Europe, while in Slovenia less than 5 percent of households have a mortgage. Between 40 and 60 percent of households in Slovakia, Slovenia, Hungary and Turkey have a credit card, which is comparable to the levels of credit card use in Germany, Italy, France, or the U.K. By contrast, less than 10 percent of households in Russia have a credit card.

Our analysis shows that the composition of the households which use credit varies systematically with the ownership structure of the banking sector. In particular, the difference in mortgage use between households with formal employment - and thus a documented reliable, income source – and households without formal employment is higher in countries with a stronger presence of foreign banks. The estimated differential effect of foreign banks on mortgage borrowing by households with and without formal employment is large: In Croatia (with 90% asset share of foreign banks) we estimate that households with formal employment are one-third (or two percentage points) more likely to have an outstanding mortgage than households without formal employment. By contrast, in neighboring Slovenia (with 30% market share of foreign banks) households with formal employment are not more likely to have a mortgage than households without formal employment.

Our main finding is robust to controlling for potential omitted variable bias and endogeneity of foreign bank entry. As we examine differential effects of foreign bank presence across household types our result cannot be driven by aggregate endogeneity effects. However, it could be that foreign banks choose to expand their activities in countries where formally employed, or high-income households use more credit. To account for potential reverse causation we follow Detragiache et al. (2008) and instrument foreign bank presence with the population of each country in 2007. In addition, we include dummy variables for the primary sampling units (PSU) to control for any such effects on the local level. To account for omitted variable bias we control for the interaction of our main household-level explanatory variables with the aggregate income level GDP per capita and level of financial sector development (Private credit as a share of GDP). By doing so, we disentangle the compositional effects of foreign bank ownership from those of aggregate income levels and financial development. In order to disentangle between supply and demand effects, we gauge whether the interaction between the market share of foreign banks and our main household characteristics varies between households with high versus low demand for credit. As an instrument for household credit demand we use the incidence of a young child (less than 10 years) in the household.

The causal interpretation of our main finding is also supported by a comparison of households which have outstanding mortgages with foreign banks to households which have mortgages with domestic banks. Univariate comparisons document that households which borrow from foreign banks have 22 percent higher income levels, are 32 percent more likely to have formal employment and 29 percent more likely to own a car. Finally, we show that foreign banks are more likely to rely on financial analysis and on personal collateral in the loan application process than domestic banks.

Our data provides tentative evidence that access to unsecured credit may be absolutely lower for financially opaque households in countries with foreign bank dominance. However, further research is necessary to examine under which conditions foreign banks push domestic banks to lend to opaque households or under which conditions they may make it unprofitable to do so.

To our knowledge, this is the first paper to examine how foreign bank ownership impacts on credit use across different household types. We contribute to the recent literature which examines to what extent foreign banks "cherry pick" clients in host markets and whether this leads to cream-skimming of the credit market, i.e. that foreign bank penetration is negatively related to the use of credit among financially opaque clients (see, e.g. Detragiache et al., 2008). The existing empirical evidence on cherry-picking by foreign banks is limited to enterprise credit (Mian, 2006, Gormley, 2010, Giannetti and Ongena, 2012). These studies show that foreign banks are more likely to lend to large, financially transparent firms than domestic banks. These studies also show that cherry-picking by foreign banks may not necessarily lead to a cream-skimming effect: For a sample of small, medium and large firms from Eastern Europe Giannetti and Ongena (2012) show that while foreign banks lend to larger, more transparent firms, all firms seem to benefit from the indirect competitive effect of foreign bank entry. By contrast, Gormley (2010) shows that a strong presence of foreign banks in Indian regions is associated with less lending by domestic banks and an absolute decline in enterprise lending.

Our contribution to this literature is to document that cherry picking by foreign banks is not only relevant for enterprise credit, but also for the increasingly important household credit market: Foreign banks are more likely to lend to financially transparent clients in a transactional manner, while domestic banks are more likely to lend to opaque clients. Moreover, we show that the cherry-picking of retail clients by foreign banks implies that in

emerging markets with strong foreign bank presence, financially transparent households have a relative advantage in accessing credit compared to opaque households.

We also contribute to the nascent literature documenting the relevance of relationship banking in the retail credit market. An extensive empirical literature documents the prevalence and economic relevance of firm-bank relationships in corporate lending (see Kysucky and Norden, 2013, for a meta-study). By contrast, only few studies explore the role of relationship banking in retail credit: Agarwal et al. (2010b) provide evidence that relationship accounts with credit-card borrowers exhibit lower probabilities of default and have higher utilization rates, compared to non-relationship accounts. Puri et al. (2011) provide evidence that clients with a prior relationship or a broader relationship scope are less likely to default on loans. Guiso et al. (2013) provide survey evidence suggesting that households with a strong relation to their bank are less likely to default strategically on their mortgage. We contribute to this literature by documenting that in the context of emerging markets information asymmetries between banks and retail clients affect the landscape of bank-household relationships: Foreign banks are more likely to lend to financially transparent clients. Our findings also support recent evidence which highlights the importance of information asymmetries in lending to households (Karlan and Zinman, 2009; Agarwal et al., 2010a; Keys et al., 2010)).

Finally, we contribute to the growing literature on household use of formal banking services in emerging economies and developing countries. We hereby complement studies which document how bank ownership affects the level of financial services used by households. On a cross-country level, Beck et al. (2007) find that foreign ownership is negatively associated with outreach as measured by the number of accounts per capita, while Beck et al. (2008) find that barriers for bank customers are lower in banking systems with more foreign bank participation. Brown and De Haas (2012) show that foreign bank

takeovers in Emerging Europe are associated with increased lending to the household sector. By contrast, Beck and Martinez Peria (2010) find a negative impact of foreign bank entry in Mexico on branch penetration and the number loan (and deposit) accounts. Recent survey collection efforts have allowed rigorous household-level analysis of the use of formal and informal services (see for example, Honohan and King, 2009; Beck et al., 2010; Aterido et al., 2013 for evidence on Southern and Eastern Africa using FinScope surveys).[3] To our best knowledge, this is the first study to use household-level survey data to examine how variation in the structure of the banking sector across countries affects the composition of households which use financial services.

The remainder of this paper is organized as follows. The next section introduces the data and discusses our methodology. Section 3 presents the empirical results and section 4 concludes.

2. Data and methodology

This section describes the different data sources, presents descriptive statistics and discusses our methodology.

A. Data

Our household-level data are taken from the EBRD-World Bank *Life in Transition Survey* (LITS) implemented in 2006 and 2010, as a repeated cross-sectional survey. Our analysis focuses on the 2010 survey wave as this wave provides more comprehensive information on the use of secured and unsecured credit.[4] The 2010 survey wave covered 30 countries in

[3] There have been a series of country-level studies on Brazil, Mexico, and Romania, among others, over the past ten years. Most of these, however, use a sample that is geographically limited, even within the respective country. For a broader overview and discussion, see World Bank (2007).

[4] The 2006 survey does not allow us to isolate household use of credit cards and thus unsecured credit. Moreover, the 2006 does not include information on the bank which mortgage borrowers have their loan from, while the 2010 survey does.

which the EBRD operates, comprising 18 countries in Eastern Europe (including Kosovo), 10 countries in the Caucasus and Central Asia as well as Russia and Turkey. In each country, roughly 1,000 interviews were conducted with randomly selected households for each wave of the survey. A consistent two stage sampling method was used, with 50 areas based on census, electoral register or other territorial classification systems per country as primary sampling units (PSU).[5]

Our analysis is focused on a sample of 19 countries covering 17 countries in Eastern Europe as well as Russia and Turkey.[6] In order to separate the use of household credit from the use of business credit we drop all self-employed households from our sample, i.e. households which report that their main source of income is a family-owned business. After further excluding households with missing information on socioeconomic control variables we are left with a total sample of 16,590 households located in 1,393 different PSU across our 19 countries.

The first part of the LITS questionnaire is conducted with the household head and elicits information on household composition, housing, expenses and use of services. The second part of the questionnaire is administered to one adult member of the household and yields information on that person's attitudes and values, current economic activity, as well as personal information.[7] We use information from the first part of the survey to yield indicators of household use of credit, income, economic activity as well as household size, and the gender and age of the household head. From the second part of the survey we obtain

[5] Details of the LITS methodology are available at: http://www.ebrd.com/downloads/research/economics/litsrepo.pdf . The total number of PSU sample frames varied from 182 in Mongolia to over 48,000 in Turkey, with a similar variation in their size, ranging from a few hundred to several hundred thousand.

[6] We drop Kosovo from the Eastern European countries due to missing data. We drop all countries from the Caucasus and Central Asia due to the very low incidence of household credit in these countries (see Beck and Brown, 2011).

[7] The second part of the questionnaire was conducted with the adult household member with the most recent birthday. This implies that for 40% of the households two people (the household head and another adult member) were interviewed, while for 60% of the households one person was interviewed (the household head).

indicators of education, employment status, social integration, and religion. Table 1 provides definitions and the sources for all variables. Table 2 provides summary statistics.[8]

Table 1 here

Table 2 here

We employ two indicators of household credit, one each for secured credit and for unsecured credit. The dummy variable *Mortgage outstanding* indicates whether a household owns its dwelling and has a mortgage outstanding at the time of the survey.[9] The dummy variable *Credit card* measures whether any member of the household has a credit card at the time of the survey. Summary statistics presented in Table 2 show that five percent of the households in our sample have an outstanding mortgage while 29 percent have a credit card. The use of credit cards and mortgages is only weakly correlated: Of the 843 households which have an outstanding mortgage only 57 percent also have a credit card.[10]

Figure 1 documents a substantial variation in the use of household credit across the countries in our sample, which is strongly correlated with aggregate income-levels.[11] Between 40 and 60 percent of households in Slovakia, Slovenia, Hungary and Turkey have a credit card, which is comparable to the levels of credit card use in Germany, Italy, France, or the U.K. By contrast, less than 10 percent of households in Russia have a credit card. Only

[8] The LITS dataset includes sampling weights to account for the differences in the ratio of sample size to population size across countries, as well as for sampling biases within countries. We use these weights when calculating summary statistics.

[9] Besides providing information on current outstanding mortgages the LITS provides information on whether homeowners financed their house with a mortgage at the time of buying the house. Descriptive statistics show that 12% of households in our sample had a mortgage at the time they bought a house, while only 5% have a mortgage outstanding. As the empirical results are qualitatively identical for both indicators of mortgage use we choose to report those for *Mortgage outstanding* only. The reason is that only for these mortgages do we have information on which bank the household currently has its mortgage with.

[10] The correlation coefficient between *Credit Card* and *Mortgage outstanding* is 0.153 and is significant at the 1% level.

[11] Spearman rank correlations on country averages show a correlation between Credit card (Mortgage outstanding) and Per Capita GDP of 0.49 (0.68). Both correlations are significant at the 5% level (n=19).

two countries in our sample, Hungary (15 percent) and Estonia (14 percent) show levels of mortgage use which are comparable to that in Western Europe.[12] By contrast, in Slovenia, the country with the highest per capita GDP in our sample, less than 5 percent of households have an outstanding mortgage.

Figure 1 here

Motivated by the conjecture that foreign banks may cherry pick their retail borrowers, we are primarily interested in how the use of household credit is related to three objective indicators of the creditworthiness of households: the household income level, the incidence of a documented, reliable income source, and the availability of personal collateral. The variable *Expenses* is our proxy of household income and measures annual household expenses in USD.[13] Our indicator of income documentation and reliability is formal employment status. The dummy variable *Formally employed* captures whether the respondent had a formal employment contract during the past 12 months. Finally, our indicator of personal collateral is whether households have a moveable pleadgeable asset, i.e. a *Car*. Table 2 shows that average annual per capita income in our sample is 3,706 USD, 42 percent of respondents are formally employed, while 50 percent of households have a car.

We control for an array of household characteristics which previous research (e.g. Cox and Jappelli, 1993) suggests affect household demand for and access to credit. *University degree* captures whether the respondent has tertiary education or not. Household *Age* and *Size* capture the age of the household head in (log) years, and the total number of

[12] Data from the 2010 LITS suggests that 20 percent of households in Germany and 25 percent of households in Italy have a mortgage. The level of mortgage use in the UK (42 percent), Sweden (43 percent) and France (59 percent) is substantially higher.

[13] Household expenses are measured according to the OECD household equivalized scale. In line with the literature on household surveys, LITS asks about expenses rather than income as households are more likely to be truthful about expenses (Haughton and Khandker, 2009).

household members, respectively. The gender of the household head is captured by the dummy variable *Male*. We use a dummy variable *Transfer receiver* to capture households which rely on state or private transfers as their main source of income.[14] *Language* indicates whether the respondent speaks at least one official language and is thus an indicator of social integration. The variable *Muslim* is a dummy variable indicating followers of Islam. We expect that Muslim households are less likely to use credit.[15]

Our indicator of foreign bank-ownership is defined as the asset share of foreign controlled banks in the respective country, averaged over 2007 to 2009, (*Foreign banks*) and is taken from the EBRD transition report. There is considerable variation in the market share of foreign banks across countries: foreign banks have only 16 percent of total banking assets in Turkey, while their market share is 98 percent in Estonia.

Finally, we use bank-survey data from the 2012 Bank Environment and Performance Survey (BEPS). Specifically, we have data for 345 banks from our 19 sample countries, 193 of which are foreign-owned. We use information on the question "Please score the importance (frequency of use) of each lending technique for retail customers?" and distinguish between (i) relationship (knowledge of the client), (ii) fundamental/cash flow analysis (financial information) and (iii) collateral (personal assets).

B. Methodology

To assess the hypothesis that objectively creditworthy households are more likely to use credit in countries with higher foreign bank market shares, we rely on a difference-in-differences approach. In a first step, we conduct univariate difference-in-differences tests: We compare the incidence of household credit, in sub-samples of high vs. low-income

[14] Transfer income covers both state and private (charity) transfers. Using separate dummy variables for these two transfer categories yields qualitatively similar findings.
[15] Grosjean (2011) shows that regions in South-East Europe which were under the influence of the Ottoman Empire, and thus the religion-based prohibition of interest-lending persisted longer show a significant lower level of financial development.

households, formally vs. not formally employed households and households with vs. households without a car. We conduct this difference test for countries with market shares of foreign banks above and below the sample median (80%). These univariate comparisons give us first insights into whether the elasticity of household credit to income-level, a documented cash flow and personal assets varies across countries with different levels of foreign bank ownership. Results of our univariate analysis are presented in Table 3.

The second step of our analysis involves a multivariate regression analysis in which we employ household-level control variables to control for differences in the composition of households across countries. We relate our two indicators of household $CREDIT_{h,c}$ of household h in country c to our main household-characteristics X_h , household-level control variables Z_h and the interaction terms of our main household characteristics with the foreign bank share F_c.

$$\mathrm{CREDIT}_{h,c} = \alpha_p + \beta_1 \mathrm{X}_h + \beta_2 \mathrm{X}_h * \mathrm{F}_c + \gamma \mathrm{Z}_h + \varepsilon_{h,c} \qquad [1]$$

While β_1 measures the relationship between our household characteristics and household credit, β_2 captures the differential relationship between household characteristics and household credit across countries with different market shares of *Foreign Banks*. We include PSU fixed effects α_p to control for omitted variables at the region-level within countries. We allow for clustering of error terms on the country-level to control for possible correlation between error terms across households within countries. We estimate model [1] with a linear probability model due to the difficulty of interpreting the marginal effects of interaction terms in non-linear models (Ai and Norton, 2003).[16] In addition, we would lose PSU where all or no household uses household credit if we used non-linear regression models with PSU fixed effects. Results from model [1] are presented in Table 4.

[16] In unreported regressions, we confirm our findings qualitatively using probit regressions.

In the third step of our analysis we account for endogeneity and omitted variables bias. To account for omitted variable bias in model [1] we control for the interaction of our main household-level explanatory variables with the aggregate income level *GDP per capita* and level of financial sector development (*Private credit* as a share of GDP). By doing so, we disentangle the compositional effects of foreign bank ownership from those of aggregate income levels and financial development.[17] We present these results in Table 5.

Note that as we examine differential effects of foreign bank presence across household types our results cannot be driven by an aggregate endogeneity effect, i.e. that foreign banks expand their activities in countries where they expect households on aggregate to use more credit. However, it could be that foreign banks choose to expand their activities in countries where high income, formally employed, and well educated households use more credit. For example foreign banks are more likely to expand their activities in countries with stronger expected income growth in the formal economy. It might be precisely in such economies that high-income, formally employed, and well educated households incur more debt in order to smooth consumption, because they expect their own incomes to grow fast in future.

To account for potential reverse causation we follow Detragiache et al. (2008) and instrument *Foreign banks* with the *Population* of each country in 2007. Country size may be either positively or negatively related to foreign bank presence. On the one hand, larger countries (e.g. Russia or Turkey) may be more likely to attract international banks as they provide better possibilities to exploit scale economies and undertake arms-length operations. On the other hand, smaller countries (e.g. Montenegro) may be more likely to attract foreign banks as they do not provide sufficient market scale to sustain an independent banking sector. Figure 2 documents that in our sample of countries the domestic population size is strongly

[17] Existing evidence shows for example that countries with higher income levels display a broader access to banking services (see e.g. Beck et al. 2007).

negatively correlated with the market share of foreign banks.[18] At the same time it is unlikely that the size of a country per se is related to the propensity of households to use credit. Our IV results are presented in Table 6.

Figure 2 here.

In a fourth step, we attempt to disentangle supply and demand-side effects. Significant coefficient estimates β_2 in model [1] can be explained both by households being more attracted to foreign banks as their incomes and asset-holdings rise and their employment status is formalized or by foreign banks reaching out to more creditworthy clients. In order to disentangle between supply and demand effects, we gauge whether the interaction between the market share of foreign banks and our main household characteristics varies between households with high versus low demand for credit. As an instrument for household credit demand we use the incidence of a young child (less than 10 years) in the household. Our reason for choosing the incidence of a child is as follows: Conditional on household income, household size and the age of the household head, households with young children are more likely to change their dwelling and invest in additional durable consumer goods (e.g. a larger car), Thus it is very likely that all else equal households with young children will have a higher demand for credit than households without young children. At the same time, the incidence of a young child should not affect the creditworthiness of a household from the perspective of a bank, conditional on household income-level, income source and personal collateral.

If our results from model [1] are driven by demand-side factors, we should observe a stronger interaction effect between *Foreign Bank* share and our main household variables for

[18] A spearman rank correlation yields a coefficient of -.598 and is significant at the 1% level.

households with a young child compared to those without a young child. Specifically, we augment model [1] as follows:

$$\text{CREDIT}_{h,c} = \alpha_p + \beta_1 X_h + \beta_2 X_h * F_c + \beta_3 X_h * F_c * Y_h + \beta_4 X_h * Y_h + \gamma Z_h + \varepsilon_{h,c} \quad [2]$$

In model [2] Y_h is a dummy variable indicating whether the household has a young child. The coefficient β_3 measures the differential effect of foreign bank share on the elasticity of household credit to household income, formal employment and collateral for households with compared to those without young children. Results for model [2] are presented in Table 7.

In the fifth step of our analysis we examine whether more creditworthy households are more likely to borrow from foreign as opposed to domestic banks. For 635 of the 843 households in our sample which report an outstanding mortgage, we collect information on the lending bank. [19] We match the lending bank with bank ownership information from Claessens and Van Horen (2012) and information on bank size (total asset volume) from Bankscope. Table 2 shows that among the current mortgage borrowers 83 percent have their mortgage with a foreign-owned bank, of which 23 percent are with a greenfield foreign bank and 60 percent with a foreign take-over bank. Focusing on those households which report that they have a mortgage outstanding and for which we have information about the lending bank we examine whether more creditworthy households are more likely to borrow from foreign banks. Model [3] presents our corresponding estimation equation. The corresponding results are presented in Table 9.

$$\text{FOREIGN}_{h,c} = \alpha_c + \beta_1 X_h + \gamma_1 Z_h + \gamma_2 Z_c + \varepsilon_{h,c} \quad [3]$$

Finally, we use bank-level survey data from the 2012 BEPS to compare the lending techniques of foreign- and domestically owned banks by computing the share of foreign and

[19] We thank the EBRD for providing us with this non-public information.

domestic banks, for which (i) relationship lending, (ii) financial analysis and (iii) collateral are very important lending techniques for retail customers. Results are reported in Table 10.

3. Results

A. Baseline results

Table 3 presents our univariate difference-in-differences comparisons for the incidence of *Mortgage outstanding* (Panel A) and *Credit card* (Panel B). We compare the incidence of credit in countries with a low market share of foreign banks to countries with a high market share of foreign banks and compare this difference for households with high objective creditworthiness (high income, formally employed, own a car) to that for households with low creditworthiness (low income, not formally employed, no car).

The Table 3 results provide first evidence that foreign banks are more likely to target the most creditworthy clients in a country. We find that the share of households with a *Mortgage outstanding* is significantly higher in countries with a high market share of foreign banks (5.7%) than in countries with a low market share of foreign banks (4.4%). This difference is significantly stronger, for high-income households than low-income households (1.5 percentage points), for formally employed than not formally employed households (3.3 percentage points) and for households that own a car compared to those that do not (2 percentage points). Given that only 5 percent of households in our sample have an outstanding mortgage these effects are not only statistically significant, but also economically relevant.

The results presented in Panel B for *Credit card* are less clear. On average we find that households in countries with a high market share of foreign banks are four percentage points less likely to have a credit card than households in countries with a low market share of foreign banks. Interestingly, though the lower use of credit cards in countries with strong

foreign bank presence seems to be exclusively driven by households without formal employment: These households are 8.1 percentage points less likely to have a credit card than households with formal employment in counties with strong compared to weak foreign bank presence. By contrast, we find that foreign bank presence reduces the use of credit cards indiscriminately among high income and low income households, as well as among owners and non-owners of cars.

Overall, the Table 3 results provide first evidence that foreign banks may cherry-pick the financially transparent retail borrowers and those borrowers with marketable collateral in emerging Europe. The table also provides tentative evidence that the impact of cherry-picking by foreign banks on the clients they do not target may depend strongly on the credit market in question. In the mortgage market foreign bank presence is not associated with an absolute lower use of credit cards by less-creditworthy households. By contrast the Table 3 results suggest that foreign bank presence may be associated with cream-skimming in the unsecured credit market: In countries with a high foreign bank market share all households, except those with formal employment, are significantly less likely to use credit cards.

Table 4 presents our baseline, multivariate estimates for the relation between foreign bank ownership and household credit. In columns (1-2) we present OLS regressions for *Mortgage outstanding* and in columns (3-4) for *Credit card.* Columns (1) and (3) present benchmark estimations relating household credit to household characteristics. Columns (2) and (4) present our estimation of model [1] including the interaction terms of *Expenses*, *Formally employed* and *Car* with *Foreign banks* to gauge the difference in the elasticity of household credit to household creditworthiness across countries with different market shares of foreign banks. All regressions contain PSU fixed effects and the standard errors reported in brackets are adjusted for clustering at the country level.

The Table 4 estimates confirm that the use of mortgage loans is more strongly related to formal employment and car-ownership in countries with a higher share of foreign banks. By contrast, controlling for other household characteristics we no longer find that the elasticity of mortgage credit to household income is stronger in countries with more foreign banks. In addition, while the large, positive estimate of *Foreign banks * Formally employment* in column (4) suggests that the use of credit cards is more strongly related to formal employment in countries with stronger foreign bank presence, this coefficient is not precisely estimated.

The results presented in Table 4 are not only statistically but also economically relevant. To illustrate the economic significance, compare the incidence of outstanding mortgages in Slovenia where the market share of foreign banks is 30% and neighboring Croatia where the market share of foreign banks is 90%. We estimate that in Croatia households with formal employment are two percentage points more likely to have an outstanding mortgage than households without formal employment, while households which own a car are three percentage points more likely to have a mortgage than households which do not own a car. By contrast, in Slovenia households with formal employment or households who own a car are one percentage point less likely to have a mortgage than households without formal employment or which do not own a car.

Considering our household-level control variables the estimates in Table 4 show that households with higher education, younger households and larger households are more likely to use mortgage loans and credit cards. Households which rely on transfer income, do not speak the local language or are Muslim are less likely to use credit.

B. Accounting for Endogeneity

Our findings so far provide evidence that the use of mortgage credit is more dependent on household employment status and the availability of personal assets in countries where the market share of foreign banks is higher. But this does not necessarily imply that foreign banks cherry pick their retail credit clients. Our multivariate findings in Table 4 may be driven by omitted variable bias, due to the correlation of foreign bank presence with aggregate income levels or financial sector development across countries. In addition, our findings may be the result of reverse causation: Foreign banks may target countries in which more creditworthy households are more likely to demand credit.

Table 5 here

The Table 5 regressions show that our results are robust to accounting for the correlation of foreign bank presence with aggregate income levels and financial development across countries. In this table we add interaction terms of our three indicators of household creditworthiness with *GDP per capita* (columns 1 and 3) and *Private credit* (columns 2 and 4) to our baseline model. The estimated coefficients for these additional controls partly confirm that more creditworthy clients are more likely to use credit in high-income countries and in countries with deeper financial sectors. Importantly, though, the estimated coefficients for our variables of interest *Foreign banks * Expenses*, *Foreign banks * Formally employed* and *Foreign banks * Car* are hardly affected in terms of statistical significance nor economic magnitude by the inclusion of these controls.

In Table 6 we account for the potential endogeneity of foreign bank presence by instrumenting the market share of *Foreign banks* with a country's *Population*. Columns (1) and (2) present the second-stage regressions with our key variables of interest *Foreign banks*Expenses*, *Foreign banks*Formally employed* and *Foreign banks*Car* instrumented

by the terms *Population*Expenses*, *Population*Formally employed* and *Population*Car*. Columns (3-5) display the corresponding first-stage estimates.

The first stage regressions confirm that the market share of foreign banks is negatively correlated with population. We find that *Foreign banks*Expenses* is significantly negatively correlated with *Population*Expenses*, *Foreign banks*Formally employed* is significantly negatively correlated with *Population* Formally employed, and Foreign banks*Car* is significantly negatively correlated with *Population* Car*. The F-tests for our instruments (4.05, 11.65, 13.99 respectively) suggest that population size is a valid instrument for foreign bank presence.

The second-stage results reported in columns (1-2) of Table 6 confirm our baseline result for the interaction term *Foreign Banks*Formally employed* in the mortgage regressions. Indeed, the point estimate of this interaction term in the regression for *Mortgage outstanding* (column 1) increases in economic magnitude compared to our estimates in Table 4. By contrast, compared to our baseline regression the interaction term *Foreign Banks*Car* loses economic and statistical significance.

Together the Table 5 and 6 results suggest one main finding in our data which is robust both to potential omitted variable bias as well as to accounting for the endogeneity of foreign bank presence: In countries where foreign banks have larger market shares the use of mortgage credit is more strongly conditioned on whether some household member has formal employment and thus whether the household has a documented, reliable income source.

C. Demand vs. Supply

The differential effect of foreign banks on the use of mortgage credit by households with formal employment might be driven by either demand or supply-side factors. Households with formal employment might be more likely to use mortgages in countries with

a higher share of foreign banks, because the products these banks offer (to all clients) appeal most to salaried households. Alternatively, foreign banks may tailor their mortgage products specifically to salaried households, while discouraging potential borrowers with less formal income sources.

In order to disentangle demand-side from supply- side drivers of our results, we examine whether the differential effect of foreign banks on borrowing by financially transparent households is stronger for households with a higher demand for credit. As discussed in the previous section our indicator of credit demand is the whether there is a child in the household. Table 7 presents our corresponding regression results. Columns (1-2) present estimates for *Mortgage outstanding* while columns (3-4) present estimates for *Credit card*. In columns (1, 3) we add the variable *Child* to our baseline regressions, and confirm that – conditional on household income and size as well as the age of the household head– households with children are more likely to use mortgage credit than households without children. Indeed the point estimate for *Child* in column 1 suggests that the magnitude of the child effect on mortgage use (3 percentage points) is quite substantial. By contrast, we do not find that households with children are more likely to use a credit card. This result is not surprising given that children are more likely to lead to higher demand for housing related credit than non-housing related credit.

The estimates presented in column (2) of Table 7 suggest that the differential effect of foreign banks on the use of mortgages by high (versus low) creditworthy households is not predominantly driven by demand-side factors. The triple interaction terms between *Foreign banks*, our three indicators of creditworthiness, and the dummy variable *Child* do not enter significantly at the 5% level in this regression. On the other hand, our main term of interest *Foreign banks*Formally employed and Foreign banks*Car* enter with similar coefficient sizes as in our baseline regression in Table 4. The estimates in column (4) also do not show

differential elasticities on credit card holdings by households with and without young children.

D. Which households borrow from which banks?

If foreign banks really do cherry-pick their clients then we would expect to see that among those households which do have mortgages, the financially transparent households and households with personal assets are more likely to borrow from foreign banks than from domestic banks. Our data suggest that this is the case.

Table 8 here

In Table 8 we compare the household characteristics of mortgage borrowers in our sample, conditional on whether they borrow from a foreign-owned or domestic-owned bank. This comparison is based on 635 mortgage borrowers in our sample for which we could obtain information on the lending bank.[20] The results show that households which borrow from foreign banks have higher income-levels, are more likely to have formal employment and are more likely to own a car than households which borrow from domestic banks. The magnitude of these differences are substantial: Households which borrow from a foreign bank have a mean per-capita income of 5,105 USD compared to 4,200 USD for households which borrow from domestic banks. Among households which borrow from foreign banks 66 percent have formal employment and 76 percent own a car compared to 50 percent formally employed and 59 percent of car owners among households which borrow from domestic banks. The table

[20] We exclude a total 14 households from Macedonia, Russia and Ukraine as we have less than 10 observations for each of these countries. For the remaining 16 countries the number of observations are as follows: Albania: 10, Bosnia: 29, Bulgaria: 25, Croatia: 49, Czech Republic.: 46, Estonia: 96, Hungary: 100, Latvia: 57, Lithuania: 35, Montenegro: 15, Poland: 12, Romania: 39, Serbia: 36, Slovak Republic: 49, Slovenia: 17, Turkey: 10.

further shows that households which borrow from foreign banks are younger, more likely to have a university degree and more likely to have a male household head.

The substantial differences in our indicators of creditworthiness for foreign bank borrowers vs. domestic bank borrowers do not seem to be driven by the fact that new entrants or large banks target different clients than existing or smaller banks. Table 8 shows no difference in income-levels, formal employment or car ownership for households which borrow from a greenfield foreign bank (new entrants) compared to households which borrow from a take-over foreign bank. Also, splitting banks by their asset volume into small banks (below median assets within each country) and large banks (above median assets within each country) we again see no difference in our indicators of creditworthiness.

Table 9 here

Table 9 presents our multivariate analysis examining which households borrow from which types of banks. In columns (1-3) the dependent variable is *Mortgage – Foreign bank* which takes on the value one for households which have their mortgage with a foreign bank and zero for households which have their mortgage with a domestic bank. In columns (4-5) the dependent variable is *Mortgage – Greenfield bank* which is one for those households which borrow from a greenfield foreign bank and zero for those which borrow from a take-over foreign bank. In columns (6-7) the dependent variable is *Mortgage – Large bank* which is one for those households which borrow from a bank with above median asset volume in its country of location. All columns report marginal effects of probit estimates with standard errors clustered at the country level. In columns (1,4,6) we control for differences across countries in the market share of foreign banks, aggregate income and financial sector development with the variables *Foreign banks, GDP per capita* and *Private credit*. In

columns (2,3, 5, and 7) these country-level covariates are replaced with country fixed effects.[21]

The estimates reported in columns (1-3) of Table 9 suggest that high-income households are more likely to borrow from foreign banks rather than domestic banks. However controlling for income and other household characteristics, we cannot confirm that households with formal employment or households which own a car are more likely to borrow from foreign banks. The column (4-5) and (6-7) estimates show that household income does not affect the propensity to borrow from greenfield as opposed to take-over foreign banks, nor the propensity to borrow from large rather than small banks.

The column (1) estimates show (unsurprisingly) that households are more likely to borrow from foreign banks in countries where these banks have a stronger market share. In column (3) we therefore restrict our sample to six countries in which the market share of foreign banks does not exceed 80%. The positive and significant estimate for *Expenses* in this sample confirms our full-sample results qualitatively, and is larger in terms of economic magnitude. The point estimate reported in column (3) suggests that an increase in household income by one standard deviation from the mean (from 4,637 USD to 7,903 USD) increases the probability of borrowing from a foreign bank by 4.5 percentage points. This effect is sizeable given that in this sample 63 percent of households borrow from foreign banks.

E. How do foreign and domestic banks lend?

In this final section, we explore whether – in line with the cherry-picking hypothesis – foreign banks rely more on transactional lending techniques than domestic banks when extending credit to households in emerging Europe. Specifically, we use data from the 2012 Bank Environment and Performance Survey that surveyed 347 banks in our sample countries

[21] Given that we focus only on households with mortgages, the sample is too small to include PSU fixed effects.

on their operational structure and lending techniques. Among others the banks were asked: "Please score the importance (frequency of use) of each lending technique for Retail customers: (i) the relationship (knowledge of the client), (ii) fundamental/cash flow analysis (financial information) and (iii) collateral (personal assets). Responses range from (1) very unimportant, (2) unimportant, (3) neither important nor unimportant, (4) important to (5) very important."

Table 10 here

The results in Table 10 show that for both domestic (44 percent) and foreign banks (40 percent) relationship lending is very important in the lending process. By contrast financial analysis is very important for more foreign banks (76 percent) than domestic banks (59 percent). Collateral is also very important for more foreign banks (51 percent) than domestic banks (38 percent). These findings are consistent with different lending techniques by foreign and domestic banks, where the former focus more transaction-based lending, using collateral and financial information for their lending decisions.

5. Conclusions

This paper uses household survey data from 19 countries in Emerging Europe to assess how cross-country variation in bank ownership affects the composition of the households which use credit. Specifically, we assess whether in countries with a stronger presence of foreign banks access to credit is tilted towards households with formal employment, households which have personal assets and high income households.

Our results show first that in countries where foreign banks have a larger market share the use of mortgage loans by households is more strongly related to formal employment and thus

to a reliable, documented cash-inflow to the household. This result is robust to accounting for differences in socioeconomic characteristics of surveyed households across countries, the endogeneity of foreign banks market share as well as omitted variable bias, e.g. the correlation between foreign bank presence and aggregate income levels or financial sector development. Comparing our results for households with high versus low demand for credit – as measured by the incidence of young children – we find that the differential effects of foreign banks on credit use by formally employed households is supply driven rather than demand driven.

Second, we show that among those households which do have mortgage credit, households with high income, formal employment and personal assets are more likely to borrow from foreign banks than from domestic banks. This result is not driven by the fact that foreign banks are more likely to be new market entrants or larger banks.

Our findings based on household-level survey data are corroborated by bank-level survey data suggesting that, compared to domestic banks, foreign banks are more likely to employ transactional lending technologies when extending credit to households. Specifically we show that foreign banks are more likely to condition their retail lending on cash-flow assessments and personal collateral of households than domestic banks.

Overall our results suggest that foreign bank presence is associated with a relative advantage in credit access for those households which foreign banks lend to on a transactional basis: households with documented income sources, personal collateral and high incomes. However, what does foreign bank presence imply for access to credit among those households which they do not target? Is foreign bank presence detrimental to access to credit for such households due to a cream-skimming effect as documented by Gormely (2010) for enterprise credit in India? Or is cherry-picking by foreign banks associated with an increase in the access to credit for the households they do not target (but domestic banks do) as

documented by Giannetti and Ongena (2012) for enterprise credit in Eastern Europe. Our analysis provides tentative evidence that whether foreign bank presence has positive or negative indirect effects on the households they do not target may strongly depend on the type of credit in question: In countries with high foreign bank market shares we observe that less creditworthy households are not less likely to use secured credit (mortgages), but are less likely to use unsecured credit (credit cards). Thus, our descriptive evidence suggests that cream-skimming might be less likely to occur in lending segments which are less subject to information asymmetries. However, more research is needed to understand in which product markets and under which market conditions foreign bank presence may have an absolute adverse effect on financially opaque households.

References

Agarwal, Sumit, Souphala Chomsisengphet and Chunlin Liu. 2010a. The Importance of Adverse Selection in the Credit Card Market: Evidence from Randomized Trials of Credit Card Solicitations. *Journal of Money, Credit and Banking* 42, 743-754.

Agarwal, Sumit, Souphala Chomsisengphet, Chunlin Liu and Nicholas C. Souleles. 2010b. Benefits of relationship banking: evidence from consumer credit markets. Working Paper Series: WP-2010-05. Federal Reserve Bank of Chicago.

Ai, Chunrong and Edward Norton. 2003. Interaction terms in logit and probit models. *Economics Letters* 80,123−129

Aterido, Reyes, Thorsten Beck and Leo Iacovone. 2013. Access to Finance in sub-Saharan Africa: Is there a Gender-Gap? *World Development* 47, 102-120.

Beck, Thorsten and Martin Brown. 2011. Use of Banking Services in Emerging Markets: Household-level Evidence. CEPR Discussion paper 8475.

Beck, Thorsten, Berrak Buyukkarabacak, Felix Rioja and Neven Valev. 2012a. Who Gets the Credit? And Does it Matter? Household vs. Firm Lending Across Countries. *B.E. Journal of Macroeconomics: Contributions 12.*

Beck, Thorsten, Katie Kibuuka and Erwin Tiongson. 2012b. Mortgage Finance in Central and Eastern Europe – Opportunity or Burden? In: Robert Cull, Asli Demirguc-Kunt and Jonathan Murdoch (Eds.): *Banking the World: Empirical Foundations of Financial Inclusion*,

Beck, Thorsten, Robert Cull, Michael Fuchs, Jared Getenga, Peter Gatere, John Randa, and Mircea Trandafir. 2010. Banking sector stability, efficiency and outreach in Kenya in: Christopher Adam, Paul Collier and Njuguna Ndung'u (Eds.): *Kenya: Policies for Prosperity*

Beck, Thorsten and Maria Soledad Martinez Peria. 2010. Foreign bank entry and outreach: evidence from Mexico. *Journal of Financial Intermediation* 19, 52-73.

Beck, Thorsten, Asli Demirguc-Kunt, and Maria Soledad Martinez Peria, 2007. Reaching out: access to and use of banking services around the world. *Journal of Financial Economics* 85, 234-66.

Beck, Thorsten, Asli Demirguc-Kunt, and Maria Soledad Martinez Peria. 2008. Banking services for everyone? Barriers to bank access and use around the world. *World Bank Economic Review* 22, 397-430.

Bonin, John and Paul Wachtel. 2003. Financial sector development in transition economies: lessons from the first decade. *Financial Markets, Institutions and Instruments* 12, 1-66.

Brown, Martin, and Ralph De Haas. 2012. Foreign Banks and Foreign Currency Lending in Emerging Europe. *Economic Policy 69, 57-98.*,

Claessens, Stijn and Neeltje van Horen. 2012. Foreign Banks: Trends, Impact and Financial Stability. IMF Working Paper 2012/10.

Claeys, Sophie and Christa Hainz. 2007 Acquisition versus greenfield: the impact of the mode of foreign bank entry on information and bank lending rates, Sveriges Riksbank Working Paper 210.

Cox, D. and T. Jappelli (1993). The Effect of Borrowing Constraints on Consumer Liabilities. *Journal of Money, Credit & Banking* 25, 197-213.

De Haas, Ralph and Ilko Naaborg. 2006. Foreign Banks in Transition Countries: To Whom Do They Lend and How are They Financed? *Financial Markets, Institutions & Instruments* 15, 159-199.

Detragiache, Enrica, Thierry Tressel, Poonam Gupta. 2008. Foreign banks in poor countries: theory and evidence. *Journal of Finance* 63, 2123-2160.

European Bank for Reconstruction and Development. Various Years. *Transition Report*. London.

Gianneti, Mariassunta and Steven Ongena. 2012. Lending by Example: Direct and Indirect Effects of Foreign Banks in Emerging Markets. *Journal of International Economics* 86, 167-180.

Gormley, Todd. 2010. The Impact of Foreign Bank Entry in Emerging Markets: Evidence from India. *Journal of Financial Intermediation* 19, 26-51.

Grosjean, Pauline. 2011. "The Institutional Legacy of The Ottoman Empire: Islamic Rule and Financial Development in South Eastern Europe". *Journal of Comparative Economics* 39, 1-16.

Guiso, Luigi, Paoloa Sapienza, and Luigi Zingales. 2013. The Determinants of Attitudes towards Strategic Default on Mortgages. *Journal of Finance* 68, 1473-1515.

Haughton, Jonathan and Shahidur R. Khandker. 2009. Handbook on Poverty and Inequality. The World Bank, Washington D.C.

Honohan, Patrick and Michael King. 2009. Cause and effect of financial access: cross-country evidence from the Finscope surveys. World Bank mimeo.

Karlan, Dean and Jonathan Zinman. 2009. Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment. *Econometrica*, 77, 1993-2008.

Keys, Benjamin J., Tanmoy K. Mukherjee, Amit Seru & Vikrant Vig (2010). Did Securitization Lead to Lax Screening? Evidence from Subprime Loans. *The Quarterly Journal of Economics* 125, 307-362.

Kysucky, Vlado and Lars Norden. 2013. The Benefits of Relationship Lending in a Cross Country Context: A Meta-Analysis. Working Paper.

Lusardi, Annamaria. 2008. Household savings behavior: the role of financial literacy, information and financial education programs. Dartmouth College mimeo.

Mian, Atif. 2006. Distance constraints: the limits of foreign lending in poor economies. *Journal of Finance* 61, 1465-1505.

Puri, Manju, Jörg Rocholl and Sascha Steffen. 2011. On the importance of prior relationships in bank loans to retail customers. Working Paper Series: 1395. European Central Bank.

World Bank. 2007. *Finance for All? Policies and Pitfalls in Expanding Access*. Washington, DC